STATE OF MINNESOTA

DEPARTMENT Cambridge State Hospital

OFFICE MEMORANDUM

DATE: May 13, 1974

TO :

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FROM : John J. Fordice, Pharm.D.
Harry D. Argetsinger, R.Ph.

SUBJECT: The Results of a Change in Laxative Preparation

Shortly after our respective arrivals at this institution we became concerned about the magnitude of use of Senokot tablets in Boswell Hall, a concern that would increase over time. We were generally of the opinion that the routine use of up to four or five Senokot tablets daily with occasional supplementary enemas and/or laxative suppositories indicated that the drug was quite ineffective and that perhaps the use of an alternate laxative preparation was in order.

We saw that there were many factors involved in the genesis and propagation of this practice, not the least of which were such factors as the physical state and characteristics of the patients, their relative lack of physical activity, diet, and fluid intake; we have chosen not to discuss these factors here. Suffice it to say that we were in complete agreement with the physician in charge that the use of a laxative was entirely in order in this population.

Subsequent to our recommendation, the input of other health professionals involved in the care of the patients in Boswell Hall, and some other factors, in September of 1973 the patients in Boswell Hall were switched from Senokot tablets to Dulcolax tablets as a routine laxative preparation. After several months of Dulcolax therapy, the general impression of the patient care personnel in Boswell Hall was that the patients were "doing better" on Dulcolax. The subject of this report shall be the results of our attempt to quantify the effects of the switch from Senokot tablets to Dulcolax tablets as a routine laxative preparation in the patients in Boswell Hall.

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The Senokot Regimen

Prior to September, 1973 the patients in Boswell Hall who required a laxative, which was the greater portion of them, were placed on a regimen similar to the following:

Day 1 (even day) - Senokot tablets were given

Day 2 (odd day) - If no bowel movement by this AM, a laxative suppository was given

Day 3 (even day) - If no bowel movement had occured a Tap Water enema or a Soap Suds enema was given

Most tablets were given every other night on even numbered days; a few patients required tablets every night. Some Senokot tablets were crushed prior to administration; retrospective estimates of the number of patients for whom Senokot tablets had to be crushed ranged as high as 50%.

The Dulcolax Regimen

In September all patients were switched from Senokot tablets to Dulcolax tablets. All patients were started on one Dulcolax tablet daily, or less frequently, regardless of the number of Senokot tablets they had been receiving. We suggested the coadministration of at least eight ounces of water with each 5 mg Dulcolax tablet. The Dulcolax regimen is generally as follows:

Day 1 - If there has been no bowel movement for 2 days, Dulcolax tablets are given

Day 2 - Wait

Day 3 - If no bowel movement has occurred,a laxative suppository is given on the afternoon shift

Day 4 - If no bowel movement has occurred by afternoon, a Sodium Phosphate enema (Fleet, Clyserol) is given

Dulcolax tablets are given "PRN" (as needed); they are not given on a routine basis. Usually the tablets are given every other night. No patients require Dulcolax tablets to be crushed, probably because of their small size. Furthermore, crushing Dulcolax tablets would destroy their enteric coating and cause an inordinate amount of side effects.

"The Summer of '73"

During "the summer of '73", not to be confused with "The Summer of '42", before medications were switched, other changes took place in the building which may have affected the bowel habits of the residents. During June the amount of fluids consumed by the residents was increased; prior to the increase the residents received juice at 2 PM and 8 PM; since then the juice has been supplemented with water at meals and again at 2 PM. Since September the residents have also received, in addition to the above, juice at 10 AM and water with each Dulcolax tablet.

The other major change that occurred in this time period which may have affected the bowel habits of the residents was the onset of programming in September. We felt that the increased physical activity associated with getting the patient out of bed and dressed, transportation to and from various Day Activity Centers and physical activity while in the DAC's would have a decidedly positive effect on bowel habits, especially when one considers the rather sedentary life style of the pre-programming era.

It was also during the summer that the use of Soap Suds enemas was discontinued and the use of Tap Water enemas was reduced. In their place, Sodium Phosphate (Fleet, Clyserol) enemas were used.

Methods

To quantify the amounts of the various drugs used during the study period (April, 1973 through February, 1974) we used Pharmacy dispensing records and totaled the amounts of drug used for the various time periods. We included the following drugs in our consideration:

1. Dulcolax tablets
2. Dulcolax suppositories
3. Sodium Phosphate enemas (Fleet, Clyserol)
4. Senokot tablets
5. Senokot suppositories

We felt that the amount of time required to administer each of these medications was another factor which we could quantify fairly accurately, and we went about doing that in the following manner: We interviewed six employees (includes one former employee) of Boswell Hall who administered medications. We asked them to estimate the amount of time required for them to administer medications in varying amounts. Their responses were averaged and the means and ranges are reported below:

Medication	Mean (in minutes)	Range (in minutes)
Senokot tablets (whole)		
#1	1.5	0.5 - 2.0
#2	1.7	0.5+ - 2.25
#3	1.8	0.5+ - 2.5
#4	1.95	0.5+ - 2.75
Senokot tablets (crushed)		
#1	3.05	0.75 - 7.0
#2	3.65	1.0 - 8.0
#3	4.25	1.25 - 9.0
#4	4.85	1.5 -10.0
Dulcolax tablets		
#1	1.5	0.5 - 2.0
Sodium Phosphate Enema	15	10 - 20
Tap Water Enema	25	20 - 30
Soap Suds Enema	25	20 - 30
Dulcolax Suppository	5.8	4 - 10
Senokot Suppository	5.8	4 - 10

We then randomly selected a group of 14 patients for whom we would calculate the amount of time required to administer their medications for the five month period before September, 1973 and for a like period after September, 1973.

An average salary for persons passing medications in Boswell Hall (Psychiatric Technicians and Senior Psychiatric Technicians) was obtained from the Personnel Department and a dollar value in terms of salary savings was established for the time saved.

Results

For the five months prior to September, 1973, 23,100 Senokot tablets were used in Boswell Hall. In the five months after September, 1973, 8,200 Dulcolax tablets were used.

The number of laxative suppositories used in the first five months was 5,600 (1,400 Dulcolax and 4,200 Senokot). The number of laxative suppositories used in the second five month period was 1,320 (1,200 Dulcolax and 120 Senokot), representing a net decrease of 4,280 suppositories.

The number of Sodium Phosphate enemas used in the second period was slightly increased. This is explained by the fact that the use of Soap Suds enemas had been eliminated completely and that the use of Tap Water enemas had been drastically cut. Sodium Phosphate enemas were used in place of the other types of enemas.

With respect to the cost of drugs used, for the period April - August, 1973, costs for laxatives in Boswell Hall were $1,598.50. For the five month period after September, 1973 (October, 1973 - February, 1974), the total costs for laxatives in Boswell Hall were $608.58.

In a group of 14 randomly selected patients, which represents slightly more than 10% of the population of the building, we saw a time savings of 31.5 hours for the five month period we studied. This amount of time saved represents a salary savings of $94.50 for 14 patients over five months, based on an average salary for persons passing medications in Boswell Hall.

Discussion

In the recent past many factors have changed which would alter the bowel movement habits of the residents of Boswell Hall. They include increasing the fluid intake of the residents, the increased physical activity associated with programming and the change of their laxative medication. We will not attempt to rate these factors as most important, least important, etc.; all three factors together have had a significant impact on the bowel movement habits of the residents of Boswell Hall.

We have reported the results of a study in which we have attempted to quantify the effects of the switch in laxative medication: Senokot tablets to Dulcolax tablets. The cost of the drugs was reduced by almost $1,000.00 in a five month period; this figure extrapolated to a one year period would result in a savings for the cost of drugs alone of $2,400.00.

Because the vast majority of the patients involved are now taking only one tablet at each dose rather than four or five tablets, and because the Dulcolax tablets are small and "easy to go down", we have been able to demonstrate a time savings of 31.5 hours in a statistically representative sample of fourteen patients; based on an average salary for the persons passing medications in Boswell Hall, this represents a salary savings of almost $100.00. Over one year the amount of time saved throughout the entire building would be 756 hours, somewhat more than ⅓ of an employee. The dollar value of this amount of time is approximately $2,200.00. This time and money was actually expended, of course, but the fact that the time could be used at other activities, such as direct patient care and at other staff-resident interactions, is significant.

Some staff in Boswell suggested that because fewer medications were being given less frequently, the amount of time required for charting the administration of medications would be drastically decreased. We certainly agree with that opinion, but we did not try to document that time savings. Because of this factor, the amount of time saved might be significantly more than what we report here.

As dramatic as the reduction in cost and numbers of medications used are, we feel that the effect this change in medication had on the resident is paramount. We were agreed that the residents required a laxative. By the substitution of a more effective laxative preparation, we have been able to improve the quality of care of the patients in

Boswell Hall in that less laxative medication has had to be used, and the use of more drastic measures to induce defecation has been decreased. It is interesting to note that the observations of many of the staff in Boswell Hall echo the results we show here.

In closing we feel compelled to point out that all the positive results reported here are the result of the cooperative interaction of several disciplines in the health professions. It emphasizes the fact that inter-professional cooperation is a desirable activity and suggests a mechanism by which optimal patient care may be achieved.

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cc: Utilization Review Committee

	Dulcolax Tablets[1]		Dulcolax Suppositories[2]		Enemas[3,6]		Senokot Tablets[4]		Senokot Suppositories[5]		Total
	#	$	#	$	#	$	#	$	#	$	$
April, 1973	0	-	300	49.20	60	14.40	4900	112.70	960	153.60	329.90
May, 1973	0	-	350	57.40	72	17.28	5100	117.30	1020	163.20	355.18
June, 1973[7]	0	-	200	32.80	84	20.16	3900	89.70	780	124.80	267.46
July, 1973	0	-	250	41.00	192	46.08	4700	108.10	780	124.80	319.98
August, 1973	0	-	300	49.20	282	67.68	4500	103.50	660	105.60	325.98
Totals	0	-	1400	229.60	690	165.60	23100	531.30	4200	672.00	1598.50
September, 1973[8]	700	17.29	450	73.80	114	27.36	2800	64.40	300	48.00	230.85
October, 1973	1500	37.05	250	41.00	132	31.68	0	-	60	9.60	119.33
November, 1973	1800	44.46	250	41.00	168	40.32	0	-	0	-	125.78
December, 1973	1700	41.99	300	49.20	178	42.72	0	-	0	-	133.91
January, 1974	1600	39.52	200	32.80	252	60.48	0	-	60	9.60	142.40
February, 1974	1600	39.52	150	24.60	96	23.04	0	-	0	-	87.16
Totals	8200	202.54	1200	188.60	826	198.24	0	-	120	19.20	608.58

[1] Dulcolax Tablets - 2.47¢ each

[2] Dulcolax Suppositories - 16.4¢ each

[3] [illegible]dium Phosphate Enemas (Fleet, Clyserol) - 24¢ each

[4] [illegible]kot Tablets - 2.3¢ each

[5] [illegible]ot Suppositories - 16¢ each

[6] Includes Sodium Phosphate Enemas only; does not include Tap Water and Soap Suds Enemas

[7] Soap Suds and Tap Water Enemas were stopped during this month

[8] September, 1973 was the month when medications were switched. Data from this month has not been consi[illegible]